REMARKS

Claims 1-18 and 21-24 are currently pending. By this Amendment, claims 1, 7, 8, 11, 14 and 15 are amended, claims 19 and 20 are cancelled, claim 10 is withdrawn from consideration and claims 21-24 are newly added. No new matter is added. Reconsideration and withdrawal of the restriction requirement in view of the following remarks are respectfully requested.

Applicant appreciates the indication of allowable subject matter in claims 7, 8, 14 and 15. In response, claims 7, 8, 14 and 15 are rewritten in independent form. Applicant respectfully submits that these claims are in condition for allowance.

Claims 1-4, 9, 11, 12 and 16-18 were rejected under 35 USC § 103(a) over U.S. Patent No. 4,361,469 to Trutna in view of U.S. Patent No. 877,460 to Brunner et al. ("Brunner") or U.S. Patent Publication No. 2004/0107682 to Letzel. This rejection is respectfully traversed.

Trutna discloses a distillation column 10 having a plurality of gas-liquid separators 26, 27, 28. Each of the separators includes a plurality of vertically spaced rows or levels of channels 37 or 38. The gas-liquid mixture flows upward through the distillation column 10. As gas-liquid mixture flows through the separators 26, 27 and 28, its direction changes such that mixture contacts the channels 37, 38 such that liquid collects in the channels 37, 38.

By contrast, amended claim 1 is directed to a separation system for de-entraining liquid particles from an upwardly flowing gaseous stream. The separation system includes a de-entrainment zone of vertically spaced, parallel tiers of elongated, U-shaped, liquid collector channels arrayed transversely to the flow of the gaseous stream. Each of the elongated, U-shaped, liquid collector channels having a bottom portion and a pair of sidewalls extending therefrom. Each tier includes parallel rows of collector channels that are staggered vertically from the rows in the next adjacent tier. A plurality of horizontally-elongated flow deflectors extending parallel to each channel in the region between an upper tier and an adjacent lower tier, in a direction downwards towards a channel of the lower tier, to deflect the flow of the gaseous stream from a lower tier

through gaps between adjacent rows in an upper tier, to separate entrained liquid from the gaseous stream and permit the separated liquid to descend into channels of a lower tier for collection. Each of the plurality of horizontally-elongated flow deflectors of an upper tier deflects at least a portion of the gaseous stream into a corresponding channel of the lower tier, and each deflector extends below the bottom portion.

Amended claim 11 is directed to a multi-tray distillation unit having at least one contact tray for contacting a gaseous stream flowing upwardly in the unit with liquid passing downwardly through the unit and at least one separator for de-entraining liquid particles from the gaseous stream after passing through liquid on the contact plate. Each separator includes vertically spaced, parallel tiers of elongated, U-shaped, liquid collector channels arrayed transversely to the flow of the gaseous stream. Each tier includes parallel rows of collector channels that are staggered vertically from the rows in the next adjacent tier to deflect the flow of the gaseous stream from a lower tier through gaps between adjacent rows in an upper tier. Each upper tier channel having at least one rigidly-mounted, horizontally-elongated flow deflector extending downward from the upper tier channel towards a lower tier channel below the deflector to separate entrained liquid from the gaseous stream and permit the separated liquid to descend into channels of a lower tier for collection. Each of the plurality of horizontally-elongated flow deflectors of an upper tier deflects at least a portion of the gaseous stream into a corresponding channel of the lower tier. The deflectors extend below the bottom portion.

The Office Action correctly notes that Trutna fails to disclose the claimed deflectors of claims 1 and 11. The Office Action first relies on Brunner to allegedly teach the deficiencies in Trutna. Brunner discloses an apparatus for separating liquids from gases or vapors. Brunner discloses a series of tubes. The lower surface of the tubes contains perforations or openings formed therein. These perforations permit the gas-liquid mixture to flow into the tubes such that the liquid collects within the tubes.

Brunner fails to disclose, teach or suggest deficiencies in Trutna because Brunner fails to disclose the claimed deflectors. The perforations in Brunner do not direct the gas-liquid mixture into a lower tube. Instead, the perforations in Brunner direct the flow of gas-liquid into the tube containing the perforations. As such, Brunner does not teach a

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horizontally-elongated flow deflector on each of the channels of an upper tier that deflects at least a portion of the gaseous stream into a corresponding channel of the lower tier. Furthermore, Brunner does not disclose that the deflectors extend below the bottom portion.

Applicant respectfully submits that the combination of Trutna and Brunner fails to disclose the subject matter set forth in independent claims 1 or 11. Accordingly, applicant respectfully submits that Trutna and Brunner do not render obvious the claimed subject matter. Claims 1 and 11 are allowable over the combination of Trutna and Brunner. Claims 2-4, 9, 12 and 16-18 depend from either claim 1 or claim 11. Accordingly, applicants respectfully submit that these claims are allowable of Trutna and Brunner for at least the same reasons. Reconsideration and withdrawal of the rejection based upon Trutna and Brunner are respectfully requested.

The Office Action also relies upon Letzel for allegedly teaching the claimed deflectors. Letzel discloses a gas-liquid separator having U-shaped deflectors 5 that are positioned on the free ends of the channels 1 and 2 to direct the flow of the gas-liquid mixture into the channel having the deflectors 5 mounted thereon. The deflectors of Letzel do not direct the gas-liquid mixture into a lower tier of channels. Furthermore, the deflectors do not extend below the bottom portion of the channel. Instead, the deflectors are located adjacent the top portion.

Applicant respectfully submits that the combination of Trutna and Letzel fails to disclose the subject matter set forth in independent claims 1 or 11. Accordingly, applicant respectfully submits that Trutna and Letzel do not render obvious the claimed subject matter. Claims 1 and 11 are allowable over the combination of Trutna and Letzel. Claims 2-4, 9, 12 and 16-18 depend from either claim 1 or claim 11. Accordingly, applicants respectfully submit that these claims are allowable of Trutna and Letzel for at least the same reasons. Reconsideration and withdrawal of the rejection based upon Trutna and Letzel are respectfully requested.

Claims 5, 6 and 13 were rejected under 35 USC § 103(a) over Trutna in view of Brunner. This rejection is respectfully traversed.

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As discussed above in connection with claims 1 and 11, Brunner does not disclose the claimed flow deflectors that direct the flow of the gas-liquid mixture into a lower channel. While the perforations of Brunner may be located on the lower portions of the tubes, these perforations do not direct at least a portion of the gas-liquid mixture into the channels of a lower tier. One of ordinary skill in the art would not be motivated to include the perforations of Brunner on the channels of Trutna to direct the flow of the gas-liquid mixture into the channels of the lower tier. The combination of Brunner and Trutna would result in a arrangement that directs the gas-liquid mixture into the channels containing the perforations, and not the channels in a lower tier.

Accordingly, applicant respectfully submits that the combination of Trutna and Brunner fail to disclose, teach or suggest the subject matter of claims 1 and 11. Claims 5, 6 and 13 depend from either claim 1 or claim 11 and are allowable over Trutna and Brunner for at least the same reasons. Applicant respectfully requests reconsideration and withdrawal of the rejection based upon Trutna and Brunner.

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Applicant respectfully submits that the claims are allowable over the prior art cited of record. Applicant respectfully requests allowance of the application. Should any issues remain, applicant respectfully requests that the Examiner contact applicant's undersigned attorney at the telephone number listed below to resolve any such issues. Please charge any fees associated with the submission of this paper to Deposit Account Number 05-1330.

Respectfully Submitted,

EXXONMOBIL RESEARCH AND ENGINEERING COMPANY

GLENN T. BARRETT
Registration No.: 38705
Tel. No.: 703.846.4311
Fax No.: 703.846.7799

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ExxonMobil Research & Engineering Company
Law Department
1545 Route 22 East
P.O. Box 900
Annandale, NJ 08801

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